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ABSTRACT

The "epistemological reflection model" of Marcia Baxter Magolda is reviewed, and the implications of her work for the education of college students are considered. Four levels of knowing are postulated by Baxter Magolda; these are "Absolute" knowing, "Transitional" knowing, "Independent" knowing, and "Contextual" knowing. The four stages are reviewed, and the implications for teaching approaches are discussed. Baxter Magolda studied college students as freshman (N=101) and again 5 years later after graduation. Of 70 who participated in the second study, 13 were graduate students. A sharp decline in Transitional knowing and consequent increases in Independent and Contextual knowing were found in the follow-up study. The application of the model to a specific classroom is discussed. Considerations regarding three major components of applicability (students, the teacher, and the constraints of the context) are discussed. Some out-of-class activities may contain elements that facilitate Independent and Contextual knowing. The theory is related to other work in the field, and the importance of the work is discussed. Contains 14 references. (EMK)

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Cognitive Development During and After College: Implications for Access Education

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What is the course of cognitive development during the university years? How does development change in the workplace? Of what significance are these changes for educators?

Perhaps the most recent and productive approach for understanding the cognitive development of American college students is Marcia Baxter Magolda's (1992) Epistemological Reflection model. This model is influenced by the epistemological approaches of Perry (1970, 1981), Belenky, Clinchy, Goldberger, and Tarule (1986), and King and Kitchener (1994). These approaches were summarized at the 1996 EAN conference (Hettich, 1996) and in Hettich (1997). This paper recapitulates Baxter Magolda's model in the context of her post-baccalauerate study (Baxter Magolda,1994), and it examines the implications of her work for the education of students.

Baxter Magolda's Epistemological Reflection Model

Baxter Magolda interviewed 101 randomly selected traditional age freshmen (51 females, 50 males) who enrolled at Miami University of Ohio in 1986. Her sample is homogeneous in age (80% were 18 years old when the study began), race (only 3 students are members of nondominant populations), and setting (most students at this "selective" state university were Ohio residents).

Her methodology included taped interviews and the MER (Measure of Epistemological Reflection), a short-essay questionnaire consisting of items that paralleled the interviews. The interview and MER addressed six domains of knowing:

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the nature of knowledge, decision making, and the roles of the learner, instructor, peers, and evaluation of learning. From her analysis of the data, Baxter Magolda constructed four levels of knowing: Absolute Knowing, Transitional Knowing, Independent Knowing, and Contextual Knowing. Gender related patterns of knowing were found in the first three levels.

Absolute Knowing

"Absolute knowers view knowledge as certain. They believe that absolute answers exist in all areas of knowledge. Uncertainty is a factor only because students do not have access at the time to absolute knowledge" (Baxter Magolda, 1992, p. 36). According to students in this stage, the learner's role is to obtain knowledge from an all-knowing instructor who uses teaching methods that promote the acquisition and retention of information, mainly through memorization. The purpose of evaluation and assessment is to show the instructor that the student can reproduce the knowledge acquired. The role of peers in learning is minimal, given that their knowledge of the topic is limited only to what the instructor has provided.

Baxter Magolda discerned two patterns of knowing among absolute knowers that are opposite ends of a continuum. Receiving-pattern learners describe their role in terms of listening and notetaking and take a private approach to learning. They expect little or no interaction with instructors, view peers as sources of support in listening and occasionally asking questions, and regard assessment measures as tools for demonstrating what they know. Receiving-pattern students in the study tended to be women, but some were men.

On the opposite side of the continuum are Mastery-pattern learners who describe their role as assertive and public in the classroom, interacting and sometimes arguing with instructors whose job is to challenge students to master knowledge in class and for exams. Peers are but partners in the interaction process. Mastery-pattern

students tended to be men but some were women. Baxter Magolda (1992) observed that Absolute Knowing characterized 68% of the freshmen, 46% of the sophomores, 11% of the juniors, and 2% of the seniors in her sample.

What implications do these findings have for teaching and learning? To engage Absolute knowers, teachers should try to be helpful, use active teaching strategies, help students understand the grading system, promote peer interaction, and provide opportunities for students to know them in and out of the classroom.

Transitional Knowing

Transitional knowing is so named because it serves as a transition stage between the certainty of Absolute Knowing and the uncertainty of Independent Knowing. "Although transitional knowers still believe that absolute knowledge exists in some areas, they have concluded that uncertainty exists in others" (Baxter Magolda, 1992, p. 47). If there are discrepancies among authorities, it is because authorities do not know the answers. According to transitional knowers, the role of instructors is not only to communicate information, but also to use methods which help students understand and apply information. Evaluation should measure understanding, not simply rote memory. Peers can help by participating in discussions and activities that promote understanding.

Two bipolar gender-related patterns of knowing observed in transitional knowers were Interpersonal and Impersonal. Interpersonal-pattern knowers, predominantly women in Baxter Magolda's sample, view learning as a process of exchanging ideas with other students and the instructor; evaluation should be an opportunity to express creatively what students understand. Uncertainties about knowledge are reduced by making personal judgments. Impersonal-pattern students, who were predominantly men, seek challenge through debate with their instructors and peers, prefer evaluation that is fair and practical, and reduce their uncertainties

through reason and research. Baxter Magolda noted that Transitional Knowing characterized 32% of the freshmen, 53% of the sophomores, 83% of the juniors, 80% of the seniors, and 31% and 8%, respectively, of the sample in the two years following graduation (Baxter Magolda, 1992, 1994).

Baxter Magolda recommends that teachers who work with transitional knowers should: (a) demonstrate a caring attitude that promotes student-teacher interaction, (b) use teaching strategies that involve students in course material and with each other, and (c) promote understanding and thinking over memorization.

Independent Knowing

"Independent knowing represents a shift to assuming that knowledge is mostly uncertain. Viewing knowledge as uncertain changes substantially the learning process and the sense of where knowledge resides" (Baxter Magolda, 1992, p. 55). According to students, the fact that authorities differ is mainly a reflection of the range of views that exist in an uncertain world. Independent knowers view themselves as equal to authorities, thus their ideas are as valid as those of their teachers. Independent knowers believe that students must think for themselves and create their own perspectives. The role of instructors is to create an environment that promotes an interchange among students who are valued as sources of ideas.

The bipolar gender-related patterns observed in independent knowers are Interindividual and Individual. In the former and predominantly female group in the study, students tend to think for themselves, but also seek the perspectives of others. Teachers are expected to promote an exchange of views and include students in the evaluation process. Individual-pattern knowers in the sample tended to be men who focused on their own independent thinking and expected peers to do the same. They prefer instructors who allow students to define their own learning goals, and expect assessment to focus on independent thinking. As the characteristic mode of learning,

Independent Knowing was found in none of the freshmen, 1% of the sophomores, 5% of the juniors, and 16% of the seniors, but it dominated the knowing of 57% and 55%, respectively, of the sample in the two years following graduation (Baxter Magolda, 1992, 1994).

Baxter Magolda's advice for instructors who work with Independent Knowing students includes the following: (a) Use teaching strategies that connect classroom learning with real life, promote independence, develop critical thinking, and encourage peer collaboration, (b) develop a genuine relationship with students, and (c) treat them with respect and as equals.

Contextual Knowing

In Contextual knowing, "The nature of knowledge remains uncertain ... but the 'everything goes' perspective is replaced with the belief that some knowledge claims are better than others in a particular context" (Baxter Magolda, 1992, p. 69). Individuals resolve the uncertainty of knowing in a particular context by judging the available evidence. The role of the learner is to think through issues, compare differing perspectives, integrate existing with new knowledge, and apply it to new contexts. Students expect their professors to create an environment which facilitates these processes, one which allows mutual critique of students with each other and with the instructor (Baxter Magolda, 1992). Baxter Magolda believes that contextual knowledge is rarely evident in college, based on the sample of young adults she interviewed. Contextual knowledge was first observed during the junior year in 1% of the students. It doubled to 2% in seniors, and characterized knowing of 12% and 37%, respectively, of the sample participants in the two years following graduation (Baxter Magolda, 1992, 1994).

Analysis of the data from interviews and the MER did not reveal gender-related patterns in contextual knowers; the two patterns seem to merge in the Contextual

Knowing stage. In the post-college phase of her seven year study, Baxter Magolda (1995) investigated the integration of gender-related patterns of knowing in 70 of her original 101 participants. "The receiving, interpersonal, and interindividual patterns illustrate relational knowing due to their connections with others and what is known" (p. 208). In contrast, "The mastery, impersonal, and individual patterns reflect impersonal knowing in their focus on objectivity and separation of knower and known" (p. 208). Using stories from the interviews, Baxter Magolda discusses how relational and impersonal patterns merge in the individual's self identity in a balanced way with respect to beliefs, career and personal decisions, and the establishment of personal relationships.

Baxter Magolda's Epistemological Reflection model informs us about differences in students' assumptions regarding the nature of knowing and learning, and the roles of teachers, peers and evaluation. Teachers should try to identify and respond to the student's current level of knowing while simultaneously promoting higher levels. Three themes emerge from Baxter Magolda's discussion of the implications of each level for teaching: a) Show respect, concern and support for each student regardless of his or her level of knowing, b) use teaching strategies and techniques that actively involve students, especially methods which promote interactions with peers and with the teacher, and c) use methods of teaching and assessment that emphasize understanding over memorization.

As Baxter Magolda's graduate degrees were in college student personnel services, she discusses the implications of her work for student services personnel and the importance of co-curricular activities for cognitive development (Baxter Magolda, 1992). Support for the role of non-academic activities is also offered by Terenzini, Pascarella, and Blimling (1996) who review research on the influence of out-of-class experiences on cognitive learning outcomes. Out-of-class experiences

include the "structured and unstructured activities or conditions that are not directly part of an institutions's formal, course-related, instructional processes." (p. 150). Among the conclusions expressed by Terenzini et al. are: a) Out-of-class-experiences are far more influential in student's cognitive development than most educators believe, b) the most powerful influence on learning includes interpersonal interactions with peers, faculty and staff, c) cognitive learning is enhanced by activities that encourage active student involvement and d) relatively few gains in cognitive development are shown by students who live at home, work full-time or work part-time off campus, spend more time socializing with friends, or have fewer intellectually related out-of-class experiences with peers and faculty members. In short, gains in cognitive development are by no means restricted to the classroom. To the extent that teachers are aware of students' out-of-class activities such as jobs, co-curricular activities, skills, and interests, they have an information resource available for promoting additional connections to student learning and development in the classroom. Some out-of-class activities may contain elements that facilitate Independent and Contextual knowing. How does cognitive development proceed after graduation with the baccalaureate degree?

Post-Baccalaureate Cognitive Development

Baxter Magolda's post-college interviews examined changes in knowing that occur in work place settings (Baxter Magolda, 1994). Of the 101 students interviewed as freshmen in 1986, 70 participated in the fifth year study. Of these, 59 students graduated within four years, the remaining 11 within five years. Thirty-seven women and 33 men participated in the fifth year of the study; 29 women and 22 men consented to a sixth year interview. After graduation the participants entered such occupations as insurance, sales, accounting, teaching, mental health, banking, advertising, retail management, airline attendant, and government. Of the 13

participants who entered graduate or professional programs immediately, eight were full-time students and five worked part-time. Baxter Magolda made appropriate revisions to her data gathering procedures for the analysis of participants' epistemic assumptions.

One obvious change between college and post-college experiences was the sharp decline in Transitional Knowing "from 80 percent in the senior year to 31 percent the fifth year and to 8 percent the sixth year" (p. 31). In contrast, Independent Knowing increased sharply from 16% in the senior year to 57% in the fifth year and declined slightly to 55% in the sixth year.

Three themes which characterized the post-college experiences of Independent knowers help explain why Transitional Knowing dropped radically and Independent Knowing surged. First, participants were expected to function independently in their setting. As one woman noted about her public relations job: "It's up to me how, what approach I take to do it, and different angles for things. It's expected of me to improve, but a lot of ... the way I do it is my choice. This gives me a lot of flexibility and creativity, which I like. There's no right or wrong to it, they are my ideas" (Baxter Magolda, 1994, p. 32). The second theme was the importance of learning by gathering information from others, whether in a job or in a graduate program. Gone was the transitional knowing assumption that peers are not essential to the learning process. The third theme was the importance of learning through direct experience. As one corporate employee described this theme, "I learned how to become very clear and concise. No one has time for frills and extra superfluous kinds of things. I learned to be prepared. I learned that you don't call someone when you don't know what you're talking about. You learn those things in school, but you don't really experience them. You don't experience the consequences or you don't experience the reality" (p. 33). Independent knowers also noted the importance of acting assertively and reducing the

influence that others have on them.

Contextual knowing increased from two percent during the senior year to 12 percent in the fifth year and 37 percent in the sixth year. Three major themes contained in contextual knowers' remarks may explain this increase. First, contextual knowers often made subjective decisions in their work. Second, they frequently acted in the role of authority. As an insurance underwriter remarked: "I make decisions in terms of risk, return, and trade-off. What's the worst possible outcome, and can I make a buffer for it? ... It is deciding the cost of writing business, how much to charge to get the business, the potential payoff" (p. 35). Third, Contextual knowers often collaborated with others in the exchange of ideas. For example, participants noted the role of brainstorming sessions in a business setting, the importance of exchanging views in a law school class, or working jointly with staff in selling medical supplies. Collaboration was viewed as a means of achieving success in one's job, not simply as a learning tool.

Some secondary themes emerged from the interviews. For example, contextual knowers noted the importance of maintaining a "can do" attitude about their work which enabled them to stretch their abilities to the limits. Also, they acknowledged the importance of experience, of believing that they were contributing to their work setting, and of finding meaning in their work, within and beyond the workplace.

In discussing the implications of the post-college study for higher education, Baxter Magolda (1994) observed

> Participants in the post-college study reported experiences that, in their perspective, affected ways of knowing that were different from ways they reported during the college study. It was the nature of these experiences - the independence and responsibility - not the context of the experiences (work or school) that was important to them. (p. 39)

In addition she noted that "Study participants found themselves in work and academic settings in which they were expected to be authorities or to find out what they needed on their own with minimal guidance" (p. 40). In view of these observations, Transitional knowers would be forced to make drastic changes in their epistemic assumptions and behavior from classroom to job or post- baccalaureate settings in order to succeed.

Baxter Magolda (1994) recommends that courses for advanced students should require them to analyze and evaluate knowledge acquired in lower level courses, develop their belief systems about it, and perform the tasks of their discipline to the extent possible in the college and university setting. To promote independent and contextual knowing, teachers should design the learning environment to provide students with independence, direct experience in decision making, accountability for their actions, and interaction with other students to explore and evaluate options - in short, an environment in which students are able to construct their knowing.

Some specific methods for promoting independent and contextual knowing used in American institutions include internships or practicums, study abroad programs, research and independent study courses, service learning programs, volunteer work, and course-based group projects in which students are responsible for planning, decision-making, and execution. For example, in a recent undergraduate internship the writer supervised, a female student in her mid-twenties worked (unpaid) approximately one day per week during the term in a shelter for battered women. Her primary responsibility was to screen callers over the telephone and determine their eligibility for entry to the shelter. She received about 15 hours of training and supervision prior to operating the phone. Throughout the internship her activities reflected many themes that characterized Baxter Magolda's Independent and Contextual knowers. First, she was expected to function independently in her position

with minimal supervision. Second, when necessary she used nearby co-workers as information resources to deal with the uncertainties of certain client situations. Third, she used her authority to make decisions about the person's situation that contained ambiguous (uncertain) and subjective components. Fourth, she increased her assertiveness and self-confidence. Finally, she knew that she was making a contribution to work that is inherently meaningful.

Baxter Magolda's model emphasizes interaction among students and forming connections to student experiences. Promoting interaction among students often involves sharing relevant experiences in class or in small groups. Although some students are willing to discuss their experiences, others may not understand the value of their particular experiences or be willing to share them. A technique successfully used by this writer is the use of journals (diaries or logs) in which students write twice weekly about specific connections between course concepts and their thoughts and experiences; occasionally entries are shared with classmates (Hettich, 1990, 1998). The student journal supplements exams and other measures of learning, accounts for 15% to 20% of the final grade, and enables the student to connect course concepts to experiences independent of those provided by textbooks and teachers. Student-centered methods such as internships, journals, and individual study allow teachers to meet a challenge posed by Baxter Magolda (1996), namely, to teach students that "the ongoing construction of knowledge involves balancing experience and evidence outside one's experience. Thus teaching involves helping students analyze their own experience in light of existing perspectives" (p. 302).

Concluding Comments

Beyond the implications and suggestions offered above, the extent to which Baxter Magolda's model is applicable to your students may depend upon three major components which probably differ for each reader: Students, you the teacher, and the

constraints of your organization.

Regarding students, because Baxter Magolda's student sample was relatively homogeneous in age, minority representation, and geographical status, there is the temptation to dismiss the model as pertaining only to young students. However, Baxter Magolda's stages of cognitive development are similar in most respects to those described by Belenky et al. (1986) and King and Kitchener (1994) whose samples were heterogeneous in age and education. In addition, Baxter Magolda's post-college study is important (and somewhat unique) because it suggests that some work places may rapidly accelerate the advanced levels of cognitive development, at least in younger-aged individuals.

How does her model apply to the mature student? For example, could we expect a first or second year student whose work experience has involved collaboration, independent thinking, decision making and other themes of the Independent and Contextual knower to be at a higher level of development than an advanced student who has little or or no work experience? Could the middle-age new student with a history of planning, organizing, and interacting with others in community service (volunteer) activities be much "smarter" than we think? In short, before making assumptions about student knowing, teachers should try to learn about a student's background and endeavor, where feasible, to use that knowledge to promote further development.

To what extent is the teacher willing to modify pedagogy (or andragogy, if you prefer) to incorporate student skills, experiences and the suggestions derived from Baxter Magolda's work into instruction? For example, to what extent is a teacher willing to give up some precious lecture time and material and in its place permit students to work on group projects which involve collaboration, decision making, using peers as resources, and direct experience (versus the vicarious learning from text and

teacher examples)?

To what extent is the organization willing to support teachers' attempts to change to the delivery of instruction that acknowledge differences in cognitive development and that promote strategies to increase Independent and Contextual knowing?

Many questions remain and much more work must be done to connect the university experience with the work place. However, if we understand the cognitive development of our students and those specific work place dimensions that promote development, we can begin to unite the academic world with the world of work. We can create a door that smoothly revolves from higher education to the world of work, not a door that closes to our students.

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THEMES THAT CHARACTERIZE POST-COLLEGE EXPERIENCES IN JOBS AND POST-BACCALAUREATE SETTINGS

Independent Knowers (from 16% senior year to 57% fifth year and 55% sixth year)

- ◇ **being expected to function independently**
- ◇ **learning by gathering information from others**
- ◇ **learning through direct experience**

secondary themes:
becoming more assertive
reducing others' influence
receiving support from peers and supervisors to increase self-confidence

Contextual Knowers (from 2% senior year to 12% fifth year and 37% sixth year)

- ◇ **making subjective decisions in their work**
- ◇ **taking the role of authority**
- ◇ **collaborating with coworkers**
- ◇ **secondary themes:**
  "can do" attitude: stretching beyond your limits
  believing that you are making a contribution
  finding meaning in work within and beyond the work place

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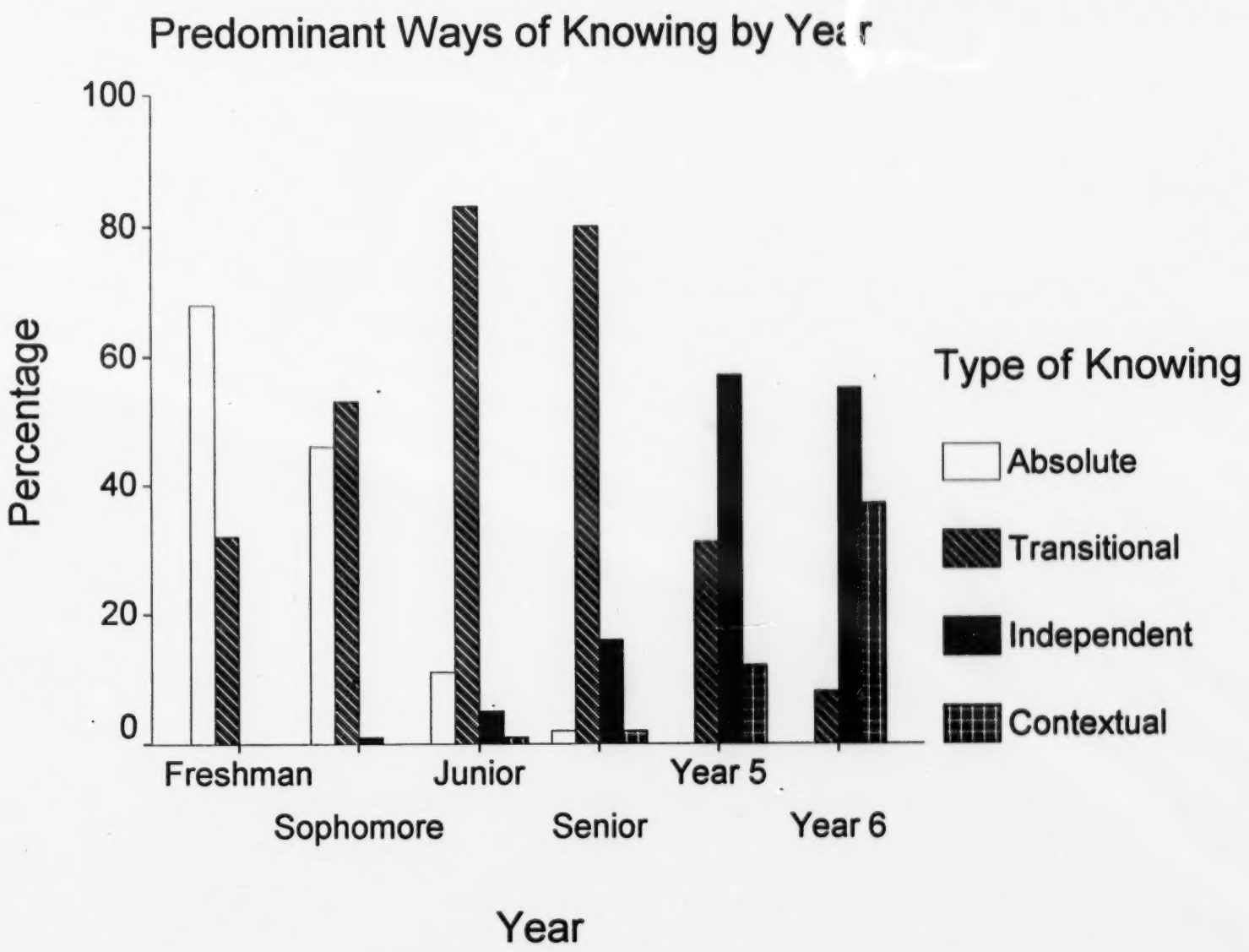

Adapted from: Baxter Magolda (1992, 1994)